

Utah's native cutthroat trout are making a comeback.

Going native

BY DIANA VOS

Project WILD Coordinator

WITH A HISTORY that takes them from the Pacific coast to the mountains of Utah, and from the edge of extinction to a recovery across the Intermountain West, Utah's native cutthroat trout have a past that's as colorful as the fish are.

Utah's native cutthroats

Cutthroat trout, the only trout species native to the Intermountain West, belong to the Pacific trout and salmon family. Cutthroats range from the Rocky Mountains west to the Pacific Ocean and from Alaska south to New Mexico. Across this range are at least 14 subspecies. Three of these subspecies—the Bonneville cutthroat, Colorado River cutthroat and Yellowstone cutthroat—are native to Utah. The Lahontan cutthroat is also found in Utah, but it's not native to the state.

All cutthroat trout sport a "cut," or patch of bright orange or red, on their

throat. They differ from rainbow trout (their closest relative) by having basibranchial (hyoid) teeth in their throats, between the gill arches and behind their tongue. In addition, cutthroats typically have longer heads and jaws, and larger and darker spots, than rainbows.

How did they get here?

The story of the cutthroat trout's dispersal across the West begins about

five million years ago, when a group of trout-like salmon ancestors split into two groups. One group became the Pacific Coast salmon and the other became the ancestors of today's cutthroat and rainbow trout. About three million years ago, the cutthroats separated from the rainbows. The rainbows stayed on the West Coast and the cutthroats ventured inland, becoming the seed stock of the various subspecies that have developed and colonized the Intermountain West.

During their travels inland, cutthroats first found their way up the Columbia River to its confluence with the Snake River. Some went up the mainstream of the Columbia while others headed west up the Snake. Over the past 70,000 years, a series of geological and climatic events have allowed cutthroats to make their way into many Western states, including Utah.

Cutthroats made their Utah debut in the Bonneville (Great) Basin about 30,000 years ago. The Bonneville Basin was not always the dry, expansive desert it is today. During wet phases of the Pleistocene, huge lakes covered nearly 50,000 square miles of the region. The largest of these lakes was Lake Bonneville, a body of fresh water



Colorado River cutthroat trout collected from Pine Creek, Garfield County.

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the size of Lake Michigan that lapped against the flanks of the Wasatch Range.

The cutthroats that entered Lake Bonneville probably arrived via the Bear River, a tributary of the Snake River that flows north out of the Uinta Mountains. For thousands of years, the Bear River flowed into the Portneuf River in southeastern Idaho. But then a series of huge lava flows sealed off the Bear River Valley and diverted the flow of the river to the south. This diversion allowed cutthroats to travel directly to Lake Bonneville.

Southern-bound cutthroats may have taken advantage of another geologic event that also occurred at about the same time. It's thought that they traveled up Marsh Creek over Red Rock Pass in southeast Idaho during a short window of opportunity. Back then Red Rock Pass was about 300 feet higher than it is today. Most of the extra height was

gravel and loose rock.

At one point, Lake Bonneville rose to a level where it spilled over the saddle of the pass, eroding the loose material away in just a few days. As the pass was breached, a wall of water 400 feet high rushed through the gap, draining into and filling the Snake River Canyon. After the initial flood, water continued to flow out of Lake Bonneville for up to 20 years, offering cutthroats a natural path into the lake. The cutthroats that entered Lake Bonneville became the Bonneville cutthroat trout subspecies we know today.

About 10,000 years ago, Lake Bonneville started to recede as the climate became warmer and drier. As the lake receded, some Bonneville cutthroats moved upstream in search of high mountain streams that were cool and clear. Others adapted to the shrinking remnant lakes of the Bonneville Basin.

Cutthroat trout also made their way to the Colorado River drainage in eastern Utah. The route they took has not been clearly determined, but they might have swum over the divide between the Hoback River and the upper Green River, or possibly over the high saddles of the Wyoming Range and the Uinta Mountains, during much cooler and wetter times in the continent's geologic past. These trout settled into the tributaries of the Green River and Colorado River on the West Slope and became the Colorado River cutthroat trout.

Utah's third native cutthroat trout, the Yellowstone cutthroat, came into the Raft River system, in Utah's extreme northeastern corner, about 8,000 years ago via the Snake River.

What caused their decline?

In 1805, Meriwether Lewis unknowingly encountered several cut-



UDWR employees collect eggs from Bonneville cutthroat trout brood stock at Manning Meadows Reservoir.

throat trout during his exploration from St. Louis to the Pacific Ocean. Caught by one of his men, below the Great Falls of the Missouri, he described these trout as "a half a dozen very fine trout ... from sixteen to twenty-three inches in length, precisely resembling our mountain or speckled trout in form and the position of the fins, but with specks of a deep black instead of the red or gould colour of those common to the U'states." This occurred just one month before Lewis gave up hope of finding the Northwest Passage he sought. Ironically, ancestors of the cutthroat trout he had eaten had already found such a passage.

Trouble for cutthroat trout began about 150 years ago as settlers poured into the West.

When settlers arrived in the Salt Lake City area, they quickly learned that the area provided excellent fishing. Howard Stansbury, an engineer who came to the Salt Lake Basin in 1849 on a surveying expedition, noted that "[Utah] lake [west of present day Provo] abounds in fine fish, principally speckled trout, of great size and exquisite flavor, which afford sustenance to numerous small bands of Utahs [sic]." Settlers followed the lead of the Native Americans and took advantage of Utah Lake's great abundance.

For a while, Utah Lake was an especially productive trout fishery, commonly yielding cutthroats up to 20 pounds. In 1864, a commercial fisherman set a net in the lake and took between 3,500 and 3,700 pounds in a single haul. Commercial fishermen also set nets in Bear Lake and its tributaries, taking 500 to 2,000 pounds of fish per day. As early as 1874, laws were enacted to protect Bonneville cutthroats but commercial netting in the region was not banned until 1897. By the 1920s, as with Panguitch Lake to the south, the trout populations in Utah Lake were extinct. Although few cutthroat populations were exploited as thoroughly as the Bonneville cutthroats, most native trout subspecies were over-fished in the years



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Bonneville cutthroat are transferred to upper Ranch Creek in Garfield County.

following the Civil War.

And over-harvest was not the only problem native trout faced. In response to the declines in native trout populations, in the late 1800s well-meaning fish commissions throughout the West began importing eggs and fry of non-native trout species. Rainbows were imported from California, brook trout from the East and brown trout from Europe. The brook and brown trout gobbled up

cutthroat eggs and fry and competed with native trout for forage, while the rainbows, close cousins of the cutthroat, interbred with the cutthroats. This interbreeding diluted pure strains of the native fish.

In addition, water diversions throughout the West were proliferating at a rapid pace. While visiting the Salt Lake Valley in 1849, Stansbury commented, "Through the city itself flows

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an unfailing stream of pure, sweet water, which, by an ingenious mode of irrigation, is made to traverse each side of every street, whence it is led into every garden-spot, spreading live, verdure, and beauty over what was heretofore a barren waste." Along the Colorado River in Utah's south-east portion, irrigators were also claiming water rights, and aggressive diversions along the upper reaches of the Arkansas River in Colorado were being actively developed. In 1883, the Wyoming Fish Commission cited irrigation dams and ditches as a major reason for the decline in the state's fisheries. The building of dams that followed in the early 1900s further affected native fish.

As more and more farmers and ranchers settled the dry West, the number of livestock exploded too. No stream in the Western states escaped the effects of cattle. In the worst cases, bottom-land riparian vegetation was browsed to the ground, causing serious erosion. With no root systems to support them, stream banks crumbled and gravel bottoms, where thousands of generations of trout had spawned, became covered with silt. Streams grew wider, shallower and warmer, making them less suitable to trout, which prefer streams that are cool and clean.

On their way back

In a 1960s Utah Department of Fish and Game publication, the Bonneville cutthroat was described as "probably extinct." Throughout the West, many native cutthroat trout populations were presumed extinct. Then came passage of the Endangered Species Act in 1973. With this legislation came renewed interest in determining whether any native trout were still alive in the West.

Biologists began their search by examining old records, museum samples and taxidermied fish to create a list of the physical characteristics of native trout. Because it's difficult to separate pure-strain cutthroats from hybrid trout, biologists also turned to state-of-the-art genetic DNA testing. Using the physical

characteristics, biologists began checking remote streams for candidate fish. Tissue samples, or entire fish, were collected and sent to laboratories for DNA analysis.

Persistence paid off

In the summer of 1974, Don Duff, a fisheries biologist with the Bureau of Land Management, pushed his way up an overgrown Deep Creek Mountains stream. At first, he found only exotic rainbows in the stream. But as he continued up the stream, he began to see rainbows that seemed to have cutthroat features. Passing over a rocky fall several miles into the canyon, he finally found trout that appeared to be pure Bonneville cutthroats. Testing in the lab confirmed his discovery. The falls had served as a barrier to the upstream progress of the rainbow trout, preventing them from hybridizing with the pure cutthroat trout above the falls.

Duff's discovery was a dramatic moment in the field of fisheries conservation. It was the beginning of a tremendous effort by personnel in public land and wildlife agencies to halt the decline of native cutthroat trout and bring them back to relative abundance.

Soon after Duff's discovery, a few small remnant populations of Colorado River cutthroats, which also had suffered a precipitous decline, were discovered. Just recently, pure populations of Yellowstone cutthroats also were found in the Raft Rivers. These were great discoveries because they showed that all three of Utah's native trout subspecies—all believed at one time to be extinct from

the state's waters—still existed within their natural ranges.

During the past decade, recovery efforts have focused on continuing to discover naturally occurring wild pure cutthroat populations, restoring native populations by removing non-native trout species and transplanting native trout into renovated areas, and developing locally native wild brood stocks where eggs can be collected and cultured in state hatcheries. Many successes have been found. For example, in 1978 only six remaining populations of Bonneville cutthroats were known to exist and they occupied less than five stream miles. By 2001, Division of Wildlife Resources biologists estimated at least 166 populations existed along 630 miles of streams. This higher number of trout led the U.S. Fish and Wildlife Service to declare that listing of the species as threatened or endangered was not warranted.

Restoration of the Colorado River cutthroat has been successful too, resulting in development of Dougherty Basin Lake on Boulder Mountain as a brood stock reservoir for the subspecies and reestablishment of populations in the Uinta Mountains and the Wasatch Plateau.

Although Utah native cutthroat trout recovery efforts have been progressing well, prospects for their continued survival are tenuous. Drought, illegal stocking of non-native species, wildfires and whirling disease are among the threats native trout continue to face. 🐟



More information: Getting WILD! Utah's WILD Notebook is produced by Utah's Project WILD program. WILD workshops, offered by the Utah Division of Wildlife Resources, provide teachers and other educators with opportunities for professional development and a wealth of wildlife education activities and materials for helping students learn about wildlife and its conservation. For a current listing of Project WILD educator workshops, visit the Project WILD Web site at www.wildlife.utah.gov/projectwild or send an e-mail to DianaVos@utah.gov.